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Down and up: Textbook research in Australia and Finland

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Abstract

The aim of the article is to compare textbook research conducted in Australia and Finland between 2000 and 2011. The article is based on information collected in a project initiated by the Norwegian government and realized by an international research group lead by Professor Susanne Knudsen at Vestfold University College in Norway. This research was published electronically at the Directorate for Education and Training (<http://sok.udir.no/Sider/utdanningresultats.aspx?k=L%C3%A6remidler>). Research findings on textbooks and educational media were identified from four areas: (1) content, form and use; (2) implementation of basic skills; (3) educational media acting against drop out as well as (4) research analysing activities in classrooms also including the use of educational aids. As this fourth area encompassed very few findings it is left out here. Table 1 gives a quantitative overview of the research conducted in a sample of countries.

Key words: textbooks, textbook research, textbook research in Finland, textbook research in Australia

Introduction

This paper has resulted from an analysis of research on textbooks and educational media published in Finland and Australia between 2000 and 2011. In the search, national and international portals were utilised. National educational journals (Australian Journal of Education and *Kasvatus*) and also journals connected to subject didactics in the areas being researched were included. The results were saturated by investigating library collections both in Finland and Australia. The material mainly consisted of doctoral dissertations and peer reviewed articles. Information was also collected by an Australian project that explored access and equity to textbooks and teaching and learning materials in Australian schools (Horsley 2012).

Country	Content, form and use	Basic skills	Drop out	Population	R/P Index
Norway	95	134	0	5000000	45.8
Denmark	167	18	0	5580000	33.2
Germany	1470	100	13	81844000	19.3
Sweden	55	31	0	9340000	9.2
France	250	28	0	65821000	4.2
Finland	18	4	0	5401000	4.1
England	122	16	6	53013000	2.7
Australia	8	5	1	21620000	0.64
Brasil	14	5	0	192755000	0.1

Table 1. Distribution of research in the three areas: content, form and use; basic skills and drop out. The R/P index is calculated by dividing the total of research with the population through 1000000.

There is consistent and convincing evidence indicating that textbooks continue to exert influence on teaching and learning in different educational settings. There is also evidence showing that the use of textbooks in classrooms and in learning varies considerably, for instance depending on the subjects taught, teacher beliefs and preferences, access to such materials, and the age of the readers (cf Sikorová 2011). Textbook research gives reason to use the concept of 'textbook' with considerable care and caution. Varying educational traditions, contexts and settings load the concept with different meanings and offer sometimes different and competing discourses. Echoing Augustine's thoughts about time, most of us know what a textbook is until we have to define it precisely. Many definitions encompass a primary conceptualisation that textbooks are texts produced for educational use within educational institutions like schools. They are also considered to be 'adapted' texts that convey a special form of approach to knowledge (Wikman 2004). This discourse provides some frames for the concept of 'textbook', but the meaning of 'textbook' can be considered elusive and can only be considered in relation to very highly articulated contexts. The transition to digital media questions traditional definitions of textbooks. There are variations of digital media, ranging from traditional textbooks in digital form to supplementary learning objects engaging the learner in different ways in knowledge construction.

Content, form and use

Australia

In the Australian schooling context textbooks are supplied to and accessed by students in different ways. According to Horsley (2012) schools use three systems to provide textbook access to students: *book list*, *book hire* and *class set*. A book list system means that a school each year will prepare a list of the textbooks and other teaching and learning materials to be used in schools and classes. The textbooks are then purchased by the students' parents. In the book hire system the school determines which textbooks to use, and provides an adequate number of textbooks with the assumption that each student should have access to their own copy of a textbook. Parents pay rent for students using the school's textbooks that have been purchased by the school. The textbooks are returned at the end of the school year by the students. The class set system means that the school provides classroom sets of textbooks for students to use. The number of textbooks provided may be less than the number of students, as books can circulate between classes. However, in class set access systems the students are unable to take textbooks home and students are unable to use the textbooks outside class time.

The three systems reflect differences in the way that schools are financed and funded in Australia, and the way that private and government schools provide differential access to teaching and learning resources like textbooks. Generally high fee private schools and some Australian states use a book list system for providing access; Catholic and wealthier government schools use a class set system and poorer government schools use a class set system. Horsley is critical of the possibilities of this system to support equity in providing access to teaching and learning resources. The system implies that many students cannot take home textbooks from school. As a result, according to Horsley (*ibid.*), the students instead take home hundreds of photocopied sheets each year. The textbook access system in Australia leads many teachers to photocopy knowledge sources and activity sheets for students to take home. On average in Australia, teachers photocopy 257 pages per student per class per year, mostly from textbooks. This access system will in turn affect teaching and learning and be aligned with the teaching and learning strategies that teachers will use.

The educational media context described above might explain the fact that textbook and educational media in Australia seems to be a somewhat under researched area. Research on content, form and use is primarily directed towards access and equity issues.

In regards to form and use a number of research projects in Australia have explored the portrayal and representation of Indigenous Australians in textbooks and teaching and learning materials. Ninnes (2000) has suggested that the neutral science approach that has been adopted, which emphasises a Western dominated presentation manner, can help strengthen racist stereotypes about Indigenous people. Ninnes recommends that Indigenous people be involved in the design and authoring of teaching and learning materials. This approach has been extended in the research of Bauer (2011).

A number of research projects have explored the role of mathematics textbooks and teaching and learning materials in mathematics teaching and mathematics pedagogy. According to Shield and Dole (2009) the design of textbooks is considered to exert a major influence both on content and methods in teaching, especially in mathematics. A number of researchers have concluded that the influence of mathematics can be considered negative in relation to pedagogy.

In another research project, Muspratt (2006) analysed textbooks in natural sciences and called for further research on how the books simplify the experienced world. Unsworth (2004) compared presentations in textbooks and digital media and identified problems in the visual presentation of scientific concepts.

Finland

Finnish research on content, form and use is also mainly directed towards the basic education context. The textbook is a central tool for teaching in Finnish schools. For example, according to a study by Atjonen et al. (2008), 78% of teachers in basic education (grades 1 to 9) (N = 262) used textbooks daily. Teacher guides were used much or very much by 32 per cent of the teachers. The use of teacher guides is typical of the Finnish school, especially in mathematics education.

Although the textbook is a central tool in Finnish schools, according to a study by Danielsson (2010) detailed studies of how texts are used in a classroom context are necessary for identifying the influence of texts. Danielsson conducted an analysis of reading activities in the chemistry classroom. According to her study, students are exposed to a variety of texts, but longer texts are neither read nor produced in chemistry teaching. According to Danielsson, textbooks on the whole are used little in chemistry teaching classroom activities in high school.

Some Finnish studies on textbook content (Väisänen 2005; Wikman 2004), call for authentic material in books and opportunities for readers to actively relate to the text. Research has been conducted aiming at improving learning outcomes for readers. For example, Mikkilä-Erdmann (2002) studied how pupils' perceptions of photosynthesis was developed using various types of texts. Some scholars (Wikman 2004; Väisänen 2005) emphasise the use of more narrative elements in learning materials. This approach could motivate readers more, as well as force authors to position themselves ideologically. In general, however, the research shows a contradictory tendency between the teachers' perception of the ideal textbook and researchers' perceptions of how learning materials should be constructed on the basis of research on learning. For example, teachers who have been interviewed on teaching material in chemistry (Ahtineva, 2000), call for several simple exercises that can strengthen the knowledge developed in teaching. It seems as if the theoretical ideal, developed from research and the literature, is not always functional in the natural context of the classroom. This paradox implies a need for research into the classroom context.

Wikman (2004) stresses that the textbook is a variable in the development of teaching and learning strategies. However, its availability to teachers and student does not proscribe the way that teachers plan and teach. Textbooks can be used by teachers as references and also as a starting point for the content and method of

teaching. As noted earlier, textbooks are frequently used by teachers in Finland. There are, however, variations in teachers' ways to relate to textbooks. According to a study by Heinonen (2005), some teachers consider textbooks as more or less identical to the prescribed curriculum, while others deliberately disregard textbooks in their planning. Pehkonen (2004) found three different ways teachers relate to textbooks: motivation, criticism and guilt. According to Pehkonen some teachers have developed their teaching thanks to didactical innovations suggested in textbooks. Textbooks can in some circumstances function as a kind of incentive for professional development of teachers.

Implementation of basic skills

The basic skills in this article refer to the Norwegian curriculum from 2006 (Knudsen 2011). In this document, writing, reading, orality, digital literacy and calculating are considered core basic skills. According to the research overview of Knudsen (ibid.) textbook research in Australia and Finland focus more on calculating than on reading and writing, which was the case in other countries in the research.

Finland

In Finnish research on textbooks and educational media, one can discern a tendency to focus on the areas where the textbook has traditionally had a central role in providing teaching and learning resources. Thus, there is a corpus of research on the role of textbooks in the field of mathematics teaching. The use of textbooks leads to demands for conformity in the selection of educational media, as school changes put students in different positions if different learning materials are used. Studies within this focus area have been applied particularly within the discipline of mathematics, especially in geometry. A comparative study by Ráty-Záborszky (2002) points to deficiencies using the spiral curriculum approach in Finnish textbooks.

Research has been conducted to a lesser extent on basic skills other than mathematics. Digital skills are a special case. Some research has been conducted but the development of technology has been so fast that it seems as though the research has not been able to keep pace with the development. According to Törnroos (2004), who examined textbooks for grade 7 in Finnish schools, teaching varies depending on the textbook teachers have used. Even if a quantitative general comparison showed that the books had a quite similar profile, there were clear differences on a detailed level.

Australia

In Australia, research on the implementation of basic skills has been directed towards mathematics in basic education. According to researchers' interpretations (Shield & Dole 2002), textbooks influence the teaching methods used. If many tasks in the textbooks deal with mechanical counting the instructional methods used by teachers lead to "shallow teaching".

Although individual researchers, for example Unsworth (2004), have made an extensive effort to analyse the linguistic aspects of teaching material, this area can still be considered under-researched.

General summary of Finnish research

A summary of Finnish research on textbooks from the year 2000 onwards gives a somewhat split impression. Most of the research has been conducted in connection with the universities responsible for the teacher training. As all teachers have a masters degree in education, the thesis work required within such studies could be an important part of Finnish research on educational media. Scattered efforts in this area can be found, but the theses were left out because of variations in availability and quality. There has been research conducted on educational media Finland, but the work is not coordinated and rather than identifying trends one can see individual initiatives in various fields.

Summary of Australian research

Australian research on textbooks and educational media gives a divided impression and exposes several areas where there seems to be a reasonable need for increased research. The research is scattered and of an ad hoc nature; it stems from the initiatives of individual researchers rather than from research environments with continuous, systematic approaches to the subject.

Australia's school system differs from the Finnish. Approximately 40 % of students attend private schools, of which one-third are financed by the students' parents. According to Horsley (2012) the parents' contribution is essential for funding of the schools' learning materials. The use of textbooks also affects research. In Australia there is a different interpretation of the concept 'textbook' than in Finland. For example, class sets of books at pupils' reading skill level are common in reading instruction, reducing the need for traditional textbooks.

Conclusion

Where do we find the impulses for research? Is it TIMSS/PISA, governmental policies or individual curiosity that steers the research? Australian research is characterised by the limited level of abstraction. The focus of almost all Australian studies is on mathematics topics and learning (50 %) and science (35%). There is almost no research on the general role of textbooks in teaching and learning. In Finland some broader pedagogical studies can be found. However, in both countries international measurements seem to be the key impulse for conducting research on textbooks and educational media. Despite the important role of textbooks, no national strategy towards research on textbooks and educational media can be found.

As the Australian educational system has become less equitable, access to educational media has been the main focus, in the 2000s, of the major research

grouping (Horsley & Walker 2006). In the 1990s this research grouping produced significantly more research on the classroom use of teaching and learning materials in multiple subject areas (English, mathematics, science, economics and social science) and developed a classroom observation schedule. In the 2000s more emphasis has been put on research into photocopying (Horsley & Walker 2006). However, there is still a need to develop knowledge about the actual processes connected to the information distributed in the photocopying process.

In Finland, due to variations in PISA results, emphasis has been put on evaluation of teacher education, rather than on research on textbooks and educational media; however, there has been considerable effort made within different areas. Also in Finland, a general systematic approach to research on textbooks and educational media is lacking. Table 1 shows that there is a need to expand the efforts to develop knowledge about almost all dimensions in textbook writing and textbook use. When it comes to textbook research, there are white spots in both ends of the world. Up and down, more coordinated research is needed.

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